

PRECISION CONSERVATION PROFESSIONAL

A VIEWPOINT FROM THE SOIL AND WATER CONSERVATION SOCIETY'S EXECUTIVE DIRECTOR

Getting the right practices, in the right places, at the right time, and at the right scale is what makes conservation effective. And making conservation effective is the main justification for investing in a conservation profession. If it didn't matter where, when, and how conservation happens, we wouldn't need a conservation profession. But it does matter because soils, landscapes, hydrology, people, weather, and objectives aren't the same everywhere. Fitting conservation into this variable physical, biological, and social landscape is what professional conservation is all about.

The special section of this issue of the *Journal* takes a look at emerging tools and approaches that promise to help us do a better job getting the right practices, in the right place, at the right time and at the right scale. Precision conservation uses a set of spatial technologies—some currently applied in precision agriculture—to “implement conservation management practices that take into account spatial and temporal variability across natural and agricultural systems.”

Most of the papers in the special section illustrate the promise of the precision conservation at the field level. At the field scale, precision conservation can mean precisely managing soil to maintain organic matter levels and to enhance soil quality. It can mean precisely designing variable width buffers that are fitted to the flow patterns in particular fields and watersheds. It can mean precisely irrigating fields to save water, reduce leaching, and prevent pollution. And it can mean matching nitrogen applications to crop uptake in fields that cuts nitrogen losses in half. Precision conservation works, in most of these examples, by focusing effort on the “hotspots” on farms and ranches—the places and/or processes that need special attention.

The really exciting promise of precision conservation to me is applying it at watershed or landscape scale. More and more I

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read papers, listen to speeches, and attend symposia that stress how important it is to direct conservation at hotspots in the watershed. In a recent symposium, for example, I heard that studies of many lakes show showing that 60 to 80 percent of the sediment and nutrient load was coming from only 5 to 10 percent of the watershed. Just last week I read that an upcoming study of the Great Lakes will estimate that treating the right 5 percent of crop fields could cut sediment loads by almost 40 percent. This should be very good news. It means we could make much more progress, much faster, and at much lower cost by getting more precise about hitting the hotspots in watersheds. But it could also be bad news. Even award winning conservation by most landowners in a watershed will not produce the results we need if those efforts miss the hotspots. Precision conservation—hitting the hotspots—at the watershed scale will pay off handsomely for producers, taxpayers, and the environment.

Two things worry me, however, about how precision conservation might go wrong. One of my professors once told me that a trap resource managers often fall into is to think too much about “doing things right” and too little about “doing the right thing.” State-of-the-art geospatial technology is amazing. I have gotten hooked watching demonstrations of the next generation of technology some lucky conservationists have on their laptops now and that most conservationists, I'm told, should have soon. But if we focus too much on having just the right tools to do precision conservation right we may overlook opportunities to do the right thing—increase the precision of our conservation efforts using the tools we have now. Precision conservation must be assisted

by technology but it shouldn't be only about technology. The thinking behind precision conservation is what really counts. We can and should apply that thinking now, even using more conventional tools, to ramp up the effectiveness of our conservation efforts.

The second thing that worries me is that we might lose sight of the human dimension of precision conservation. The production systems and practices employed by producers and with their objectives and the ways they make decisions are just as variable—and just as important in determining outcomes—as the underlying variability of soils, landscapes, and hydrology. We need to capture that variability in our precision conservation systems too, especially as we employ precision at the watershed scale, where I think its greatest promise lies. We must include elements of the human dimension among the “mapped variables” that inform precision conservation.

The evolution of conservation science and technology makes me more optimistic about the future than any other development in our profession. The principles and tools employed in precision conservation could and should open new opportunities to get the right practices, in the right place, at the right time, and at the right scales. It's a great time to be a conservation professional.



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